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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,004	09/11/2000	Kazuo Toraichi	A-371	4200

802   7590   04/20/2004

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EXAMINER
DO, CHAT C

ART UNIT	PAPER NUMBER
2124	11

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application	Applicant(s)
Office Action Summary	09/601,004	TORAICHI ET AL.
	Examiner	Art Unit
	Chat C. Do	2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2004*.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4, 6 and 8* is/are pending in the application.

    4a) Of the above claim(s) *5, 7* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 6 and 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This communication is responsive to Election, filed 02/26/04.

2.   Claims 1-8 are pending in this application. Claims 1 and 6-8 are independent

claims. In Election, claims 1-4, 6, and 8 are elected for examining and claims 5 and 7 are

non-elected. This action is made final.

Election/Restrictions

3.   This application contains claims directed to the following patentably distinct

species of the claimed invention:

     a.   Species I: claims 2-4 and 6, direct to a two variable data interpolation

system using a sampling function $H(t)$ defined as $-F(t+.5)/4 + F(t) - F(t-.5)/4$.

     b.   Species II: claims 5 and 7, direct to a two variable data interpolation

system using a sampling function $H(t)$ defined as a series of expressions in claims

     5 and 7.

     Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for

prosecution on the merits to which the claims shall be restricted if no generic claim is

finally held to be allowable. Currently, claims 1 and 8 generic.

     Upon the allowance of a generic claim, applicant will be entitled to consideration

of claims to additional species which are written in dependent form or otherwise include

all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims

are added after the election, applicant must indicate which are readable upon the elected

species. MPEP § 809.02(a).

4.   Applicant's election without traverse of Species I in Paper No. 10 filed 02/26/04

is acknowledged.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

6.   Claims 1-4, 6, and 8 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

Re claim 1, the limitation "values of a local support" in lines 6-7 is unclear

to the extent that no reasonable interpretation can be given for examination

purposes. For examination purposes, the examiner considers the sampling

function has values of a local support means its has zero value toward $+/-$ infinity.

Claims 6 and 8 have the same problem.

Thus, claim 2-4 are also rejected for being dependent on the rejected base

claim 1.

Claim Rejections - 35 USC § 101

7.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

8.   Claims 1-4 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter.

Claims 1-4 clearly recite a system for calculating the approximation data

by interpolation according to a mathematic algorithm. In order for such a claimed

system to be statutory, the claims must include either a step, means, or process

that results in a physical transformation outside the computer or a limitation to a

practical application. However, it is clear from the claims that the claims merely

recite step or non-specific means or process for data computation and

manipulation in performing a mathematical function in a generic computer. The

inputs are numbers and outputs are also numbers. The claims fail to recite any

step or means that results in a physical transformation outside the computer, that

includes a limitation to a practical application, or that requires a specific computer

system or components to implement the claimed process. Therefore, claims 1-4

are clearly directed to a non-statutory subject matter.

Claim Rejections - 35 USC § 102

9.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10.   Claims 1-4, 6, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by

Masaru et al. ("A Smooth Signal Generator Based on Quadratic B-Spline Function").

Re claim 1, Masaru et al. discloses a two variable data interpolation

system (Introduction section lines 16-18 page 1252 and Preliminaries section lines

1-5 page 1252) wherein a value between a plurality of discrete data is interpolated

by performing convolution operation (equations 1-6 page 1252) corresponding to the plurality of discrete data positioned at equal intervals in a two-dimensional space (Preliminaries section lines 1-7 page 1252) using a sampling function that can be differentiated finite times and has values of a local support (Figure 1 and left column lines 1-4 page 1253).

Re claim 2, Masaru et al. further discloses the sampling function is a function that can be differentiated only once over the whole region (Figure 1 and equations 17-18).

Re claim 3, Masaru et al. further discloses the sampling functions is defined as $H(t) = -F(t+.5)/4 + F(t) - F(t-.5)/4$ (equation 1 the summation function).

Re claim 4, Masaru et al. further discloses the third order B spline function $F(t)$ is expressed as in page 17 lines 4-6 of application (equation 2).

Re claim 6, Masaru et al. further discloses the two variable data interpolation system comprising a discrete data extracting unit (Introduction section lines 1-10 page 1252) for extracting a plurality of discrete data that exist within a predetermined range around a data interpolating position that becomes an object of interpolation operation; sampling function operating unit (Preliminaries section) for calculating a value of the sampling function $H(t)$ for each of a plurality of discrete data extracted in this manner, with letting distance between the data interpolating position and discrete data be t; and convolution operating unit (equations 4-5) for obtaining a value of the data interpolating position by performing convolution operating though adding values of the sampling function

that are calculated by the sampling function operating unit and correspond to the

plurality of discrete data respectively.

Re claim 8, it has similar limitations cited in claim 6. Thus, claim 8 is also

rejected under same rationale in the rejection of rejected claim 6.

Response to Arguments

11.   Applicant's arguments filed 02/26/2004 have been fully considered but they are

not persuasive.

c.   The applicant argues in page 14 first paragraph for claims 1-7 under 112

rejection that the "values of a local support" is sufficiently supported in the

specification.

The examiner respectfully submits that the applicant neither point-out

particular lines in the specification to support the values of a local support

nor the applicant explains in the remark. The examiner considers the

"values of a local support" sampling function as a function seen in Figure

4 with $H(z) = 0$ when $|z| >= 2$.

d.   The applicant argues in page 16 that the cited document 1 the sampling

function has no values of a local support.

The examiner respectfully submits that the cited document 1 by Masaru et

al. disclose in equations 2 and 3. These two functions ψ_l and ψ_k have

values of a local support because ψ_l is zero elsewhere in equation 1 and ψ_k

also equals to zero since ψ_k is summation product of ψ_l.

e.   The applicant argues in page 17 that the sampling function in the cited

reference has almost same shape as shown in Figure 3 of the present invention but

the sampling function in the citation exists in the range infinity.

The examiner respectfully submits that the Figure 1 of the cited reference

clearly discloses a sampling function as seen in Figure 3 of present

invention wherein t_2 is equal to 2. In addition, the sampling function in

Figure 1 is mathematically expressed in Equations 2-3 of the first page.

f.   The applicant cites in page 15 that adding the computer to perform the

function in claims would over come the rejection under 101.

The examiner respectfully submits that previous rejection under 101 is

clearly recited that the claims fail to recite any step or means that results in

a physical transformation outside the computer, that includes a limitation

to a practical application, or that requires a specific computer system to

implement the claimed process. By inserting a generic computer to

perform the function, it would not overcome the rejection. It must either

include limitation(s) to a practical application or require specific computer

step(s), process(s), or system(s) to perform the function.

Conclusion

12.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of

time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

advisory action. In no event, however, will the statutory period for reply expire later than

SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655.

The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone number for

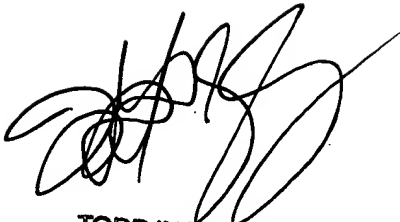the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner

Art Unit 2124

April 7, 2004

TODD INGBERG
PRIMARY EXAMINER